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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,495	03/24/2006	Kazumi Naito	Q77806	9323

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EXAMINER	
CRAWFORD, LATANYA N	

ART UNIT	PAPER NUMBER
2813	

MAIL DATE	DELIVERY MODE
01/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/573,495	NAITO, KAZUMI	
	Examiner	Art Unit	
	LATANYA CRAWFORD	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *1-4,22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-21 and 23-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 June 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the correspondence filed on 09/19/2008. Currently, claims 5-21 & 23-25 are pending. Claims 1-4 & 22 are cancelled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 21, 5- 9, 14-19, 23, & 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuchiya (4,943,892).

Regarding claim 21, Tsuchiya et al discloses a method for producing, as one electrode 1, an electric conductor having formed on the surface thereof a dielectric layer 3 (column 5, lines 10-11) and, as the other part electrode, a semiconductor layer 5 formed on the electric conductor by energization (column 5, lines 43-48) using the electric conductor as the anode (fig. 3), wherein fine protrusions 4(column 5, lines 26-27) are formed on the dielectric layer 3 before energization (fig. 1a; column 5, lines 28-29, said electric conductor 1 having inner pores formed therein(column 10, lines 16-18), and wherein a majority of the fine protrusions 4 overlay an outer surface of the dielectric layer 3 (fig. 2b) or overlay an inner pore surface of the electric conductor within 10 μm from the outer surface said fine protrusions are not in the form of a layer; and wherein the fine protrusions have a width of 0.1 to 60nm. (Examiner note that because of "or" the limitation: "or overlay an inner pore surface of the electric conductor within 10 μm

from the outer surface said fine protrusions are not in the form of a layer; and wherein the fine protrusions have a width of 0.1 to 60nm" is viewed as an alternative and was not considered).

Regarding claim 5/21, Tsuchiya et al. discloses wherein the fine protrusion 4 is at least one member selected from a metal oxide, a metal salt, a transition element-containing inorganic compound, a transition element-containing organic compound and a polymer compound (column 5, lines 26-27).

Regarding claim 6/21, Tsuchiya et al. discloses wherein the electric conductor 1 is at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon or a mixture thereof (column 4, lines 10-14).

Regarding claim 7/21, Tsuchiya et al. invention discloses the electric conductor 4 is a laminated body having, as the surface layer, n organic semiconductor, *conductive polymer* (column 5, lines 46-48).

Regarding claim 8/21, Tsuchiya et al. discloses wherein the dielectric layer mainly comprises at least one member selected from metal oxides such as Ta_2O_5, Al_2O_3, TiO_2 and Yb_2O_5 (column 5, lines 9 & 11).

Regarding claim 9/21, Tsuchiya et al. discloses wherein the semiconductor layer 5 is at least one member selected from an organic semiconductor layer and an inorganic semiconductor layer (column 2, lines 4-5; column 4, lines 20-21; column 5, lines 28-29).

Regarding claim 14/21, Tsuchiya et al. discloses wherein the inorganic semiconductor is at least one compound selected from molybdenum dioxide, tungsten dioxide, lead dioxide and manganese dioxide (column 1, lines 51-52).

Regarding claim 15/21, Tsuchiya et al. discloses wherein the electrical conductivity of the semiconductor 5 is from 10^{-2} to 10^{3} S/cm (column 10, lines 10-13).

Regarding claim 16/21, Tsuchiya et al. discloses a capacitor produced by the production method claimed in claim 1(column 3, lines 22-29 & column 5, lines 26-27).

Regarding claim 17/21, Tsuchiya et al. discloses wherein the impregnation ratio of the semiconductor is 85% or more (column 9, lines 8-11).

Regarding claim 18/21, Tsuchiya et al. discloses an electronic circuit using the capacitor claimed in claim 16 (column 1, lines14-18).

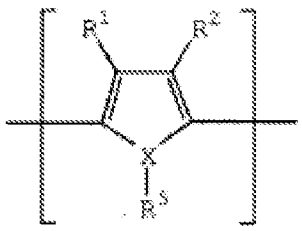
Regarding claim 19/21, Tsuchiya et al. discloses an electronic device using the capacitor claimed in claim 16 (column 1, lines14-18).

Regarding claim 23/21, Tsuchiya et al. discloses 80% or more of the fine protrusions 4 overlay an outer surface of the dielectric layer (fig. 2b; column 5, lines 26-27).

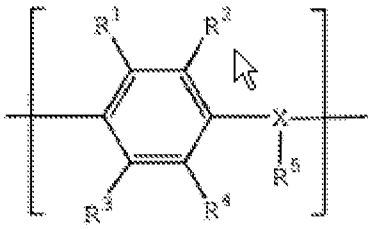
Regarding claim 24/21, Tsuchiya et al. discloses wherein the fine protrusions 4 are a transition element containing compound (column 5, lines 26-27).

4. Claims 10, 11, 12 &13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (US Patent 4,943,892) in view of Jasne (US Patent 4,724,053).

Regarding claim 10/21, Tsuchiya et al. invention discloses all of the claimed limitations of claim 21 but fails to teach the organic semiconductor is at least one member selected from an organic semiconductor comprising benzopyrroline tetramer and chloranil, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyano-quinodimethane, and an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating unit represented by the following formula (1) or (2):



(1)



(2)

wherein R1 to R4 each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 6 carbon atoms, X represents an oxygen atom, a sulfur atom or a nitrogen atom, R5 is present only when X is a nitrogen atom, and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and each of the pairs of R1 and R2, and R3 and R4 may combine with each other to form a cyclic structure.

However, Jasne et al. teaches an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating unit represented by the following formula (1) (fig. I; column 4, lines 42-54;

column 9, lines 19-29):

wherein R1(R1) to R3 (R2) each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms (column 4, lines 31-32), X represents an oxygen atom, a sulfur atom or a nitrogen atom (column 3, lines35-40), R3 is present only when X is a nitrogen atom (column 3, lines 35-40), and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms (column 4, line 41), and each of the pairs of R1 and R2 may combine with each other to form a cyclic structure (column 4, lines 33-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method for producing a capacitor of Tsuchiya et al. with an aromatic heterocyclic compound with repeating units as an electrically conducting polymer taught by Jasne et al. Doing so would provide a stable conductive polymeric material.

Regarding claim 11/21, Jasne et al. discloses the electrically conducting polymer containing a structure unit represented (3) as a repeating unit, wherein R6 (R1) and R7 (R2) each independently represents a hydrogen atom (column 4, lines 14-15, line 31, lines 35-40, & lines 53-54).

Regarding claim 12/21, Tsuchiya et al. discloses the electrically conducting polymer is selected from polyaniline, polyoxyphenylene, polyphenylene sulfide, polythiophene (column 4, lines 20-29), polyfuran, polypyrrole (column 4, lines20-29;

column 9, line 65), polymethylpyrrole, and substitution derivatives and copolymers thereof.

Regarding claim 13/21, Tsuchiya et al. discloses wherein the electrically conducting polymer is poly (3,4-ethylenedioxythiophene) (column 4, lines 20-23 & 26-29).

5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (US Patent 4,943,892) in view of Wagener (US Patent 3,299,325).

Regarding claim 25/21, Tsuchiya et al. discloses all the claim limitations as applied to claim 21 but fails to disclose electrolytic ally forming the fine protrusions on the dielectric layer.

However, Waganer et al. discloses electrolytic ally forming the fine protrusions on the dielectric layer (column 1, lines 38-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method for producing a capacitor of Tsuchiya et al. with electrolytic ally forming the fine protrusions on the dielectric layer taught by Waganer et al since doing so reduces direct current leakage.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 20, 5- 9,14-19, & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (4,943,892).

Regarding claim 20, Tsuchiya et al. discloses as one electrode, an electric conductor 1 having formed on the surface thereof a dielectric layer 3 (column 5, lines 10-11) and, as the other part electrode, a semiconductor layer 5 formed on the electric conductor by energization (column 5, lines 43-48) using the electric conductor as a anode (fig. 3), wherein fine protrusions 4 (column 5, lines 26-27) are formed on the dielectric layer 3 before energization (fig. 1a; column 5, lines 28-29); and said fine protrusions are not in the form of a layer (column 5, lines 26-27; column 8, lines 50-58) but fails to teach the feather shaped protrusion and the protrusions having a width of about 0.1 to about 120 nm and a height of about 0.1 to about 600 nm. Given the teachings of Tsuchiya et al., it would have been obvious to form feather shaped protrusions since the shape is not held to be patentable absent persuasive evidence that the shape is significant. In re Dailey, 357 F.2 d 669, 149 USPQ 47. It would have also been obvious to cover the claimed ranges through routine experimentation to discover the workable range of the process of Tsuchiya et al. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 f.2d 1575,1578, 16 USPQ2d 1934, 1936 (Fed. Cir.1990).

Regarding claim 5/20, Tsuchiya et al. discloses wherein the fine protrusion 4 is at least one member selected from a metal oxide, a metal salt, a transition element-containing inorganic compound, a transition element-containing organic compound and a polymer compound (column 5, lines 26-27).

Regarding claim 6/20, Tsuchiya et al. discloses wherein the electric conductor 1 is at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon or a mixture thereof (column 4, lines 10-14).

Regarding claim 7/20, Tsuchiya et al. invention discloses the electric conductor 4 is a laminated body having, as the surface layer, n organic semiconductor, *conductive polymer* (column 5, lines 46-48).

Regarding claim 8/20, Tsuchiya et al. discloses wherein the dielectric layer mainly comprises at least one member selected from metal oxides such as Ta_2O_5, Al_2O_3, TiO_2 and Yb_2O_5 (column 5, lines 9 & 11).

Regarding claim 9/20, Tsuchiya et al. discloses wherein the semiconductor layer 5 is at least one member selected from an organic semiconductor layer and an inorganic semiconductor layer (column 2, lines 4-5; column 4, lines 20-21; column 5, lines 28-29).

Regarding claim 14/20, Tsuchiya et al. discloses wherein the inorganic semiconductor is at least one compound selected from molybdenum dioxide, tungsten dioxide, lead dioxide and manganese dioxide (column 1, lines 51-52).

Regarding claim 15/20, Tsuchiya et al. discloses wherein the electrical conductivity of the semiconductor 5 is from 10^{-2} to 10^{3} S/cm (column 10, lines 10-13).

Regarding claim 16/20, Tsuchiya et al. discloses a capacitor produced by the production method claimed in claim 1(column 3, lines 22-29 & column 5, lines 26-27).

Regarding claim 17/20, Tsuchiya et al. discloses wherein the impregnation ratio of the semiconductor is 85% or more (column 9, lines 8-11).

Regarding claim 18/20, Tsuchiya et al. discloses an electronic circuit using the capacitor claimed in claim 16 (column 1, lines14-18).

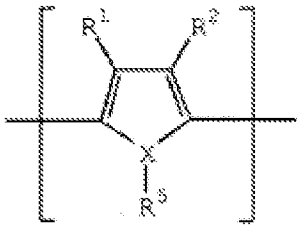
Regarding claim 19/20, Tsuchiya et al. discloses an electronic device using the capacitor claimed in claim 16 (column 1, lines14-18).

Regarding claim 24/20, Tsuchiya et al. discloses wherein the fine protrusions 4 are a transition element containing compound (column 5, lines 26-27).

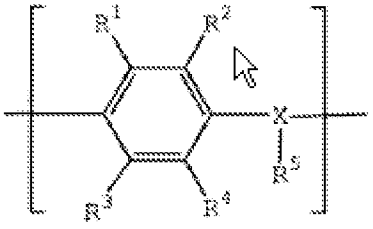
8. Claims 10, 11, 12, & 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (US Patent 4,943,892) in view of Jasne (US Patent 4,724,053).

Regarding claim 10/20, Tsuchiya et al. invention discloses all of the claimed limitations of claim 20 but fails to teach the organic semiconductor is at least one member selected from an organic semiconductor comprising benzopyrroline tetramer and chloranil, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyano-quinodimethane, and an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating unit represented by the following formula

(1) or (2):



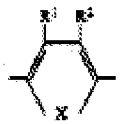
(1)



(2)

wherein R1 to R4 each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 6 carbon atoms, X represents an oxygen atom, a sulfur atom or a nitrogen atom, R5 is present only when X is a nitrogen atom, and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and each of the pairs of R1 and R2, and R3 and R4 may combine with each other to form a cyclic structure.

However, Jasne et al. teaches an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant into a polymer containing a repeating unit represented by the following formula (1) (fig. I; column 4, lines 42-54; column 9, lines 19-29):



wherein R1(R1) to R3 (R2) each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms (column 4, lines 31-32), X represents an oxygen atom, a sulfur atom or a nitrogen atom (column 3, lines35-40), R3 is present only when

X is a nitrogen atom (column 3, lines 35-40), and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms (column 4, line 41), and each of the pairs of R1 and R2 may combine with each other to form a cyclic structure (column 4, lines 33-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method for producing a capacitor of Tsuchiya et al. with an aromatic heterocyclic compound with repeating units as an electrically conducting polymer taught by Jasne et al. Doing so would provide a stable conductive polymeric material.

Regarding claim 11/20, Jasne et al. discloses the electrically conducting polymer containing a structure unit represented (3) as a repeating unit, wherein R6 (R1) and R7 (R2) each independently represents a hydrogen atom (column 4, lines 14-15, line 31, lines 35-40, & lines 53-54).

Regarding claim 12/20, Tsuchiya et al. discloses the electrically conducting polymer is selected from polyaniline, polyoxyphenylene, polyphenylene sulfide, polythiophene (column 4, lines 20-29), polyfuran, polypyrrole (column 4, lines20-29; column 9, line 65), polymethylpyrrole, and substitution derivatives and copolymers thereof.

Regarding claim 13/20, Tsuchiya et al. discloses wherein the electrically conducting polymer is poly (3,4-ethylenedioxythiophene) (column 4, lines 20-23 & 26-29).

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (US Patent 4,943,892) in view of Wagener (US Patent 3,299,325).

Regarding claim 25/20, Tsuchiya et al. discloses all the claim limitations as applied to claim 20 but fails to disclose electrolytic ally forming the fine protrusions on the dielectric layer.

However, Waganer et al. discloses electrolytic ally forming the fine protrusions on the dielectric layer (column 1, lines 38-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method for producing a capacitor of Tsuchiya et al. with electrolytic ally forming the fine protrusions on the dielectric layer taught by Waganer et al since doing so reduces direct current leakage.

Response to Arguments

10. Applicant's arguments filed 09/19/2008 have been fully considered but they are not persuasive. Applicant argues, “Tsuchiya (U.S. Patent No. 4,943,892) describes a "form of continuous layer or as island or spots" as a manganese layer, the manganese dioxide is basically in the form of a layer." The applicant further notes that fig. 1, 2, & 4 shows that the fine protrusions are dotted and not in the form of the layer. The Examiner notes that Tsuchiya still meets the claim limitation and further teaches as expressed in the rejection above in column 8, lines 50-58 that the manganese dioxide (protrusions) are deposited as spots or dots on the surface of the anodized film by immersion in an aqueous solution. Similarly in applicant’s specification the protrusions are formed by a dipping or immersion process as described in paragraph [0082] of publication US 2007/0002526 A1). Since the fine protrusions are formed by the same process , Tsuchiya teaches fine protrusions are not in the form of a layer.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LATANYA CRAWFORD whose telephone number is (571)270-3208. The examiner can normally be reached on Monday-Friday 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew S. Smith/
Supervisory Patent Examiner, Art Unit 2823

/LaTanya Crawford/
Examiner, Art Unit 2813